Response to EPA Comments on August 1994 Draft Final Corrective Measures Study/Feasibility Study (CMS/FS) 881 Hillside (Operable Unit 1) Rocky Flats Environmental Technology Site

General Comments

Comment 1:

DOE has incorrectly concluded that State Groundwater Standards are not applicable to Rocky Flats. This fundamental mistake will mean that much of this document must be rewritten in order to adequately assess compliance with this ARAR. DOE has not presented full rationale with supporting evidence that would convince EPA that these standards are not applicable.

Response:

DOE has carefully reviewed the State's groundwater ARARs position and the regulations concerning the State's Basic Standards for Ground Water (5 CCR 1002-8, 3.11.5). DOE has determined that the State's basic standards are potential ARARs for all contaminants except radionuclides. The CMS/FS will be revised to reflect this potential ARAR at OU-1.

Comment 2:

In light of the above comment, it is obvious that DOE's preferred alternative of institutions controls will not achieve compliance with State Groundwater Standards. Therefore, one of the other alternatives that will remediate groundwater must be chosen as a preferred alternative. Since the french drain and treatment plant are already in place, it seems that there is much advantage to utilizing both of these components and optimizing this system through added enhancements in order to reduce the remediation time frame. As such it may be necessary to consider other modifications to the alternatives already presented, such as the use of surfactants, horizontal wells, etc. It is also necessary to more thoroughly and accurately evaluate the effectiveness and cost of the french drain and treatment plant, factoring in the discontinued collection of 881 footing drain water.

Response:

The selection of a preferred remedy at OU-1 should be based on the results of the detailed analysis of alternatives. This approach to a preferred remedy selection is consistent with both RCRA and CERCLA and subsequent guidance under each. Assuming that a remedial action is warranted, prior to examining the revised results of the detailed analysis of alternatives, is both premature and potentially misleading. Further, it is not obvious that the preferred alternative recommended in the OU-1 draft CMS/FS report would not achieve compliance with State Groundwater Standards. Until a specific point of compliance is agreed upon, the EPA's assumption that a remedial action is necessary to achieve compliance under the State Groundwater Standards (which is different from the chemical-specific ARARs presented in the CMS/FS) is invalid. DOE has suggested demonstrating compliance with certain performance monitoring points in the interim while compliance is being evaluated by the agencies and the public.

Comment 3:

The FS states that the preferred alternative for OU1 is institutional control without the french drain but with groundwater monitorings. Under this strategy, chlorinated solvents in the subsurface will continue to contaminate groundwater until sources diminish through natural processes. However, due to some uncertainty regarding the location and nature of the sources, it is difficult to determine with confidence how long institutional controls and groundwater monitoring will be required. Modeling results presented in the FS indicate that concentrations at Woman Creek will continue to increase until the year 2369, or for 375 years into the future. To ensure that Woman Creek is protected, it follows that groundwater monitoring will be required as long as concentrations increase, but only 30 years of monitoring is accounted for in the cost estimate for the preferred alternative.

Response:

The rationale for costing a monitoring period of 30 years is based on standard costing procedures. Present worth analysis of costs will result in essentially similar values for monitoring costs for any period beyond 30 years due to the influence of interest factors. For this reason, 30-year monitoring periods are costed for all alternatives that require extended monitoring.

Comment 4:

The source removal remedial alternatives offer the possibility of removing source areas and potentially reducing the post-closure monitoring period and the potential or future corrective action. Therefore, the time required to reach remedial action objectives (RAOs) is one of the major difference among the three general types of alternatives evaluated (monitoring, containment, and source removal followed by residual contaminant containment and monitoring). The FS must evaluate the time element in more detail before a remedial alternative is recommended. The report must also provide more discussion about the uncertainty of the source extent and how this uncertainty affects the effectiveness of the source removal technologies. These discussions must also consider the degree of confidence gained after the proposed soil gas study is conducted. In addition, the FS must estimate the time it will take to reach a point when monitoring is no longer required for each alternative and incorporate these results into the comparative analysis. The FS must also consider the uncertainty associated with the models when evaluating the effectiveness of the various strategies. Finally, the FS should incorporate a sensitivity analysis into the model results to further evaluate the impact of subsurface contaminant uncertainty.

Response:

Where possible, the elements of this comment will be included in the revised CMS/FS report. However, in general, the comment is referring to additional quantification of parameters while requesting further discussions on the uncertainty of those parameters. It is because of the large uncertainty associated with the source areas at OU-1 that it was not deemed appropriate to specify the monitoring periods required for each alternative. It would be inappropriate to attempt to specify monitoring periods unless data are available for evaluation after completion of an action. The purpose of analyzing data after an action would be to detect trends in contaminant concentrations. In addition, these time periods will not affect the selection of a preferred remedy, and therefore are not critical to the detailed analysis of alternatives.

Comment 5:

Given the proximity of OU1 to Woman Creek, one of the primary functions of any remediation that occurs at OU1 should be to protect Woman Creek and the associated ecological receptors. Therefore,

protecting ecological receptors associated with Woman Creek must be an RAO for OU1.

Response:

This issue will be discussed further through a special work group designated by DOE and the regulatory agencies to resolve specific comments. However, this exposure route was not included in the RFI/RI report or the BRA and it is unclear why the EPA is raising the issue at this time.

Comment 6:

It is uncertain whether Woman Creek and the associated ecological receptors will be protected under the proposed remedial alternative. Throughout the FS, the text states that maximum contaminant levels (MCLs) need to be met only at Woman Creek to be protective. It is not clear whether MCLs will protect ecological receptors associated with Woman creek. The FS must be revised to illustrate how Woman Creek ecological receptors will be protected from OU1 contamination.

Response:

See response to General Comment #5.

Comment 7:

More detailed discussion about the proposed monitoring plan must be added to the FS, particularly since monitoring is one of the primary features of the preferred alternative and is common to all alternatives. The alternatives that would suspend french drain operations but leave it in place (Alternatives 0 and 1) imply that monitoring will continue, and that the french drain will be reactivated only if monitoring results exceed predicted values. The only locations for which predicted values are given in Appendix B are both down gradient of the french drain. The text does not specify which monitoring wells correspond to these locations. Regardless, by the time concentrations begin to exceed predicted values down gradient of the french drain, it may be too late for the french drain to be effective. If a contamination front is detected below the french drain, it is probable that the contaminants have already spread throughout the length of the french drain. Monitoring wells that will be used to trigger remedial decisions should be located above the portion of the french drain that intersects the expected contaminant flow path. Currently, the closest well reported to have 9,500 micrograms per liter (μg/L) of trichloroethene (TCE), 2,600 μg/L of carbon tetrachloride, and 590 μg/L of tetrachloroethane (PCE) from a sample collected in late 1992. On the basis of these results, french drain operation should not be discontinued under any of the alternatives. If future wells are planned for the area above the french drain, investigative methods should be used that will optimize the well location with respect to bedrock topography and the contaminant plume.

Response:

The location of monitoring wells is typically not a component of the CMS/FS as it does not affect alternative development or the detailed analysis of alternatives. This information is usually included in the PRAP/PP, CAD/ROD, or in a post-closure monitoring plan. More information regarding the monitoring plan will be incorporated into the CMS/FS report at the agency's request, although DOE disagrees that the information is relevant to the remedy selection process.

Comment 8:

There is no mention in this document of the buried gas transmission line that crosses OU1 in an east-west direction between 119.1 and the French Drain. The existence of this feature could certainly impact some of the alternatives discussed in this document. Additionally, since this line lies in the path of the migrating contaminated groundwater, an evaluation of how it might be affecting migration is needed.

Response:

It is unclear how this comment could impact the remedial action alternatives presented in the CMS/FS report. The line is a utility feature which will undoubtedly be reviewed during detailed design. The purpose of the CMS/FS report is to evaluate conceptual approaches to remediation of OU-1. Details such as the transmission line do not impact the analysis, especially in the case where the line is not in the immediate vicinity of the treatment zone as is the case here. In addition, evaluation of the transmission line as a potential route for contaminant migration is not within the scope or purpose of the CMS/FS report. This issue should have been raised during the preparation of the RFI/RI report if EPA felt that it warranted significant attention.

Comment 9:

This report fails to make use of all available and pertinent data, and this is especially critical in the ground water modeling that was performed. Apparently only analytical data from 1990 through mid 1992 was used in the modeling, even though data from 1987 to the present is readily available for this purpose. Nor were the soil gas survey results from December 1993 mentioned or presented, although a much older (pre-1987) soil gas survey was cited a few times in the text. What happened to the cores and associated data that were proposed in the OU1 Treatability Study Work Plan; Soil Flushing, Biotreatment, and Radio Frequency Heating; September, 1992? That work plan was designed for the purpose of collecting site specific data to be used in evaluating alternatives for the OU1 CMS/FS and any data that was collected must be presented in this report.

Response:

DOE believes it is appropriate to use the data set considered in the RFI/RI report for the groundwater model constructed for the OU-1 CMS/FS. Groundwater monitoring data for the hillside is available to the present date and will continue to be available in the future. However, the groundwater model must consider a data set that is static and cannot be updated continuously based on current monitoring programs. The data set selected for the model is the most appropriate data set to use given its use in the RFI/RI report, to which results of the model are being compared. Remedy selection is based on the results of the CMS/FS report, which in turn is based on the results of the RFI/RI report.

Note that the intent of the treatability study work plan was not to gather soil characterization data. Rather the intent of the study was to gather soil samples for testing of various treatment technologies. Unfortunately, soil samples recovered contained few if any detectable concentrations of contaminants even though they were taken from the most probable contaminant regions at IHSS 119.1. Data from the tests themselves were supposed to be used for evaluating alternatives. Since the tests were not performed due to the unavailability of contaminated soils, the data are not available to include in the CMS/FS report.